



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/067,506 | 02/07/2002 | Joichi Ushioda | 33082M120 | 7344 |

7590 11/26/2003

SMITH, GAMBRELL & RUSSELL, LLP
Suite 800
1850 M Street, N.W.
Washington, DC 20036

| |
|----------|
| EXAMINER |
|----------|

KACKAR, RAM N

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1763

DATE MAILED: 11/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary**Application No.**

10/067,506

Applicant(s)

USHIODA ET AL.

Examiner

Ram N Kackar

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21,25 and 26 is/are pending in the application.
- 4a) Of the above claim(s) 1-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-21,25 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-21,25 and 26 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of 10-29 on 10/31/2003 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

- 2 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

- 3 Claims 10-11, 14-15, 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Satoru Kamitani (JP 09213777) and under 35 U.S.C. 102(a) and 102 (e) as being anticipated by Satoru Kamitani (US 6028762).

Kamitani discloses a reduced pressure plasma-processing apparatus for etching or film formation having gas supply and exhaust means (Col 1 lines 41-43), an electrostatic chuck (Fig 1B and 3) with base, conductor and dielectric film having protrusions (Fig 2B 5 and 7), heat transfer fluid (9), stepped portion along outer peripheral portion not lower than protrusions (Fig

Art Unit: 1763

2A) having outlets in the groove (9) and communication of outlets to region inside of the stepped portion (Fig 1A).

Claim Rejections - 35 USC § 103

4 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5 Claims 12-13, 16-17, 21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamitani (US 6028762) in view of. Grimard et al (US 5903428).

Kamitani discloses a reduced pressure plasma-processing apparatus for etching or film formation having gas supply and exhaust means (Col 1 lines 41-43), an electrostatic chuck (Fig 1B and 3) with base, conductor and dielectric film having protrusions (Fig 2B 5 and 7), heat transfer fluid (9), stepped portion along outer peripheral portion not lower than protrusions (Fig 2A) having outlets in the groove (9) and communication of outlets to region inside of the stepped portion (Fig 1A).

Kamitani discloses protrusion height of 5 microns or higher and discloses experiment with 30 micron (Table 4) but does not explicitly disclose 50-100 micron or a shape of protrusions as curved with small area of contact.

Grimard et al disclose a processing vessel having gas supply (Fig 4-410), exhaust means (416) conductor base (Fig 1-104) with dielectric film to make it an electrostatic chuck (102) where the dielectric film has protrusions of ceramic (Col 4 lines 1-3) which are curved at the top

Art Unit: 1763

(106) with small area of contact (Fig 5-502) and have a height of 5-350 microns (Col 4 lines 15-17).

Therefore it would have been obvious for one of ordinary skill in the art to have a protrusion of small area at top so as to help in providing low restriction for cooling gas, low contamination and ease of dechucking after the completion of the process.

6 Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kamitani (US 6028762) in view of Kitabayashi et al (US 5530616).

Kamitani discloses a reduced pressure plasma-processing apparatus for etching or film formation having gas supply and exhaust means (Col 1 lines 41-43), an electrostatic chuck (Fig 1B and 3) with base, conductor and dielectric film having protrusions (Fig 2B 5 and 7), heat transfer fluid (9), stepped portion along outer peripheral portion not lower than protrusions (Fig 2A) having outlets in the groove (9) and communication of outlets to region inside of the stepped portion (Fig 1A).

Kamitani does not disclose protrusion pattern at 0-45 degrees.

Kitabayashi et al disclose a reduced pressure plasma-processing atmosphere (Col 1 lines 10-14) an electrostatic chuck (Col 1 lines 14-15) with base, conductor and dielectric film (Fig 1) having protrusions (5) and heat transfer fluid (6) and teach that protrusions may be arranged in many different patterns (Col 4 lines 14-15).

Therefore it would have been obvious to optimize protrusions patterns at an angle in order to get temperature and processing uniformity across the wafer.

7 Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kamitani (US 6028762) in view of Yukihiro Kamide (US 5306379).

Kitabayashi et al do not disclose rectangular base.

Yukihiro Kamide discloses a plasma processing apparatus with rectangular base for rectangular substrates (Fig 2-71).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have a rectangular base in order to process rectangular substrates.

Response to Amendment

Applicant's arguments filed 10/31/2003 have been fully considered but they are not persuasive.

Applicant's argument that independent claims 10, 14, 18, 19, 20 and 25 are allowable after incorporating allowable subject matter of claims 24 and 29 is no longer valid since the incorporated subject matter is modified from allowable claims 24 and 29.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 1763

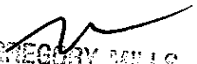
the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 703 305 3996. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703 308 1633. The fax phone number for the organization where this application or proceeding is assigned is 703 872 9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

RK


GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700